

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A modem, comprising:

a carriergroup receiving means configured to receive parameters relating to a plurality of carriers;

a carriergrouping means configured to ~~group~~ ~~determine at least one dynamically variable size carrier group~~ for the plurality of carriers into a plurality of dynamically variable size carrier groups based on the parameters, ~~[[and]]~~ to determine a plurality of first carriergroup parameters parameter for each of the at least one plurality of dynamically variable size carrier group groups, at least one of the plurality of the first carriergroup parameters parameter being a worst case parameter from among the parameters [[of]] corresponding to the plurality of carriers within each of the at least one plurality of dynamically variable size carrier group groups, and to determine a second carriergroup parameter for each of the plurality of dynamically variable size carrier groups based upon the first carriergroup parameter for each of the plurality of dynamically variable size carrier groups; and

a carriergroup transmitting means configured to transmit at least one message including the plurality of carriergroup parameters and the at least one dynamically variable size carrier group.

2. (Currently Amended) The modem of claim 1, wherein ~~at least one of the plurality of the first carriergroup parameters parameter~~ comprises:

a carriergroup signal-to-noise ratio (SNR) parameter for each of the ~~at least one~~ plurality of dynamically variable size carrier ~~group~~ groups.

3. (Currently Amended) The modem of claim 1, wherein the worst case parameter comprises:

a worst case signal-to-noise ratio (SNR) of each of the ~~at least one~~ plurality of dynamically variable size carrier ~~group~~ groups.

4. (Currently Amended) The modem of claim 1, wherein ~~at least one of the plurality of carrier group parameters~~ the second carriergroup parameter comprises:

a carriergroup bitloading parameter for each of the ~~at least one~~ plurality of dynamically variable size carrier ~~group~~ groups.

5-6. (Cancelled)

7. (Previously Presented) The modem of claim 1, further comprising:
means for using the at least one message to set up a tone encoder in a far-end modem.

8. (Currently Amended) A method for grouping a plurality of carriers in a DMT communication system, comprising:

~~grouping~~ determining at least one dynamically variable sized carrier group for the plurality of carriers used for communication in the DMT communication system into a plurality of dynamically variable size carrier groups;

determining a plurality of carriergroup parameters for each of the at least one plurality of dynamically variable sized carrier group groups, at least one of the plurality of carriergroup parameters including a first carriergroup parameter plurality of carriergroup parameters being a worst case parameter relating to ~~[[of]]~~ the plurality of carriers within each of the at least one of the plurality dynamically variable size carrier group groups, and a second carriergroup parameter being based upon the first carriergroup parameter for each of the plurality of dynamically variable size carrier groups;

using the plurality of carriergroup parameters to dynamically set up a tone encoder; and

sending at least one message using the tone encoder, the at least one message including the plurality of carriergroup parameters.

9. (Currently Amended) The method of claim 8, wherein the ~~step of determining the plurality of first carriergroup parameters parameter for the at least one dynamically variable sized carrier group~~ comprises:

~~determining~~ a carriergroup signal-to-noise ratio (SNR) for each of the at least one plurality of dynamically variable sized carrier group groups.

10. (Currently Amended) The method of clam 9, wherein the first carriergroup SNR for each of the ~~at least one~~ plurality of dynamically variable sized carrier ~~group~~ groups comprises:

a worst case SNR of the plurality of carriers within each of the ~~at least one~~ plurality of dynamically variable sized carrier ~~group~~ groups.

11. (Currently Amended) The method of claim 8, wherein the ~~step of~~ determining the plurality of second carriergroup parameters parameter ~~for the at least one~~ dynamically variable sized carrier group comprises:

~~determining at least one~~ a carriergroup bitloading for each of the ~~at least one~~ plurality of dynamically variable sized carrier ~~group~~ groups.

12-13. (Cancelled)

14. (Previously Presented) The method of claim 8, further comprising:
setting up a tone encoder in a far end modem using the at least one message.

15. (Currently Amended) A method for grouping a plurality of carriers in a DMT communication system, the DMT communication system including a near end and a far end modem, comprising:

determining at least one dynamically variable sized carrier group from the plurality of carriers used for communication in the DMT communication system;

determining a worst case carriergroup signal-to-noise ratio (SNR) for the plurality of carriers within the at least one dynamically variable sized carrier group;

determining a carriergroup bitloading and a carriergroup gain for the plurality of carriers within the at least one dynamically variable sized carrier group based on the worst case carriergroup SNR;

using the carriergroup bitloading and the carriergroup gain to dynamically set up a tone encoder in the far end modem; and

using the carriergroup bitloading and the carriergroup gain to transmit messages from the far end modem to the near end modem using the tone encoder.

16 - 18. (Cancelled)

19. (Previously Presented) The method of claim 15, wherein the communication system is a VDSL system.

20. (Currently Amended) A modem for grouping a plurality of carriers in a DMT communication system coupled to a far-end modem via a transmission channel, comprising:

carriergrouping means configured to determine ~~multiple dynamically variable sized carrier groups for~~ group the plurality of carriers into a plurality of dynamically variable size carrier groups, ~~[[and]]~~ to determine a ~~plurality of first~~ carriergroup ~~parameters~~ parameter for each of the ~~multiple~~ plurality of dynamically variable size carrier groups, ~~at least one of the plurality of the first~~ carriergroup parameters ~~parameter~~

being a worst case parameter relating to ~~[[of]]~~ the plurality of carriers within each of the ~~multiple~~ plurality of dynamically variable size carrier groups, and to determine a second carriergroup parameter for each of the plurality of dynamically variable size carrier groups based upon the first carriergroup parameter for each of the plurality of dynamically variable size carrier groups, the carriergrouping means including:

a tone decoder coupled to the transmission channel configured to transmit the messages, the tone decoder being dynamically set up based upon the first and the second ~~plurality of~~ carriergroup parameters; and

carriergroup transmitting means configured to transmit messages including the first and the second ~~plurality of~~ carriergroup parameters to the far-end modem via the transmission channel to enable the far-end modem to send and receive messages using the ~~multiple~~ plurality of dynamically variable size carrier groups.

21. (Currently Amended) The modem of claim 20, wherein the ~~plurality of~~ first carriergroup parameters parameter comprises:

a signal-to-noise ratio (SNR) of each of the plurality of dynamically variable size carrier groups.

22. (Currently Amended) The modem of claim 20, wherein the ~~plurality of~~ first carriergroup parameters parameter for each of the ~~multiple~~ plurality of dynamically variable size carrier groups comprises:

a worst case signal-to-noise ratio (SNR) for each of the ~~multiple~~ plurality of dynamically variable size carrier groups.

23. (Currently Amended) The modem of claim 20, wherein the ~~plurality of~~
second carriergroup parameters comprises:

a carriergroup bitloading parameter for each of the ~~multiple~~ plurality of
dynamically variable size carrier groups.

24 - 25. (Cancelled)

26. (Previously Presented) The modem of claim 20, wherein the messages
are used to set up a tone encoder in the far-end modem coupled to the transmission
channel.

27. (Cancelled)

28. (Currently Amended) The method of claim 1, wherein the ~~plurality of~~
~~carriergroup parameters~~ second carriergroup parameter comprises:

a carriergroup gain parameter for each of the plurality of dynamically variable
size carrier groups.

29. (Currently Amended) The method of claim 1, further comprising:
setting up a tone encoder using the ~~plurality of carriergroup parameters~~ first
carriergroup parameter and the second carriergroup parameter.

30. (Currently Amended) The method of claim 8, wherein the ~~plurality of~~
second carriergroup parameters parameter comprises:

a carriergroup gain parameter for each of the plurality of dynamically variable
size carrier groups.

31. (Currently Amended) The modem of claim 20, wherein the ~~plurality of~~
second carriergroup parameters parameter comprises:

a carriergroup gain parameter for each of the plurality of dynamically variable
size carrier groups.